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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/731,395	12/04/2000	Peter Schmiedel	H 4318	9268

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EXAMINER

KUMAR, PREETI

ART UNIT

PAPER NUMBER

1751

DATE MAILED: 08/01/2003

7

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/731,395

Applicant(s)

SCHMIEDEL ET AL. 

Examiner

Preeti Kumar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 December 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,5-21 and 23-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-21 and 23-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Non-Final Rejection

1. Claims 1-3, 5-21 and 23-36 are pending.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 3, 7, and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, the phrases "or", "and/or" and "such as" render the claims indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 1-3, 5-21 and 23-36 rejected under 35 U.S.C. 102(b) as being anticipated by Langley et al. (US 5,492,646).

Langley et al. teach the encapsulation of an active ingredient within a polymeric material so as to protect the active ingredient from the ambient environment, for instance atmospheric moisture when the product is exposed to the air, or the liquid phase of a liquid detergent when the product is incorporated in such a detergent. A dispersion in oil of an aqueous solution of a matrix polymeric material containing enzyme or other active ingredient is subjected to distillation to provide a substantially anhydrous dispersion in oil of particles of matrix polymer containing active ingredient,

and during or after the distillation the polymer solution is converted into a solid polymer. In the invention, we use a matrix polymer that is so hydrophobic that it partitions preferentially into the oil rather than into the aqueous solution of encapsulating polymer. Because the aqueous solution is incompatible with both the hydrophobic oil and the matrix polymer, there is increased tendency for the encapsulating shell to be formed around a layer of oil, rather than in direct contact with a matrix polymer particle. See abstract. Langley et al. teach converting the matrix polymer to solid form by selecting a hydrophobic polymer from the class known as "low critical solution temperature" (LCST) polymers. The process by which these can be used for the matrix is substantially the same as the process by which they can be used for forming the encapsulating shell. In brief, a characteristic of such polymers is that they can be insolubilised by heating to a critical temperature (for instance as can happen during the distillation stage) and a depressant for the temperature of insolubilisation (for instance a water miscible non-solvent or an electrolyte) can be added to stabilise the solid form at a lower temperature. See col.4, ln.55-65.

Langley et al. teach that the LCST polymer can be a naturally occurring polymer such as certain cellulose derivatives, such as the methyl, hydroxy propyl, and mixed methyl/hydroxy propyl cellulose ethers. Suitable LCST monomers include N-alkylacrylamide, N,N-dialkylacrylamide, diacetone acrylamide, N-acryloylpyrrolidine, vinyl acetate, certain (meth) acrylate esters (especially hydroxypropyl esters), styrene, and various other vinyl monomers, especially N-vinylimidazoline and the like.

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When the LCST polymer is a copolymer, the comonomer is usually hydrophilic and can be non-ionic or ionic. Suitable non-ionic monomers include acrylamide, hydroxyethyl acrylate, vinyl pyrrolidone, or hydrolysed vinyl acetate. Anionic or cationic monomer can be used in place of or in addition to the non-ionic comonomer to form a copolymer or terpolymer with the LCST monomer respectively. Suitable anionic monomers include ethylenically unsaturated carboxylic or sulphonic acid monomers, for example (meth) acrylic acid and alkaline salts thereof, and 2-acrylamido methyl propane sulphonic acid. Suitable cationic monomers include dialkylaminoalkyl (meth)acrylates and acrylamides as acid addition or quaternary ammonium salts, for example dialkylaminoethyl (meth)acrylate acid addition salts. See col.8, 14-55.

Langley et al. teach that the temperature T1 of reversible insolubilisation of the LCST polymer is the temperature at which the polymer will become insoluble if the solution containing the polymer is heated past T1 or will become soluble if insoluble polymer in that aqueous solution is cooled below that temperature. The temperature of reversible insolubilisation is generally reasonably abrupt, but may extend over a few degrees or more. Naturally T3 must be sufficiently low that any range for T1 does not significantly overlap the range for T3, which is the corresponding temperature for the polymer in the aqueous solution containing the TRI depressant. T1 is generally at least 25.degree. C. and often at least 30.degree. C. and frequently is in the range 45.degree. to 80.degree. C. but can be as high as 100.degree. C. T3 is generally at least 5.degree. C. lower than T1 and is preferably at least 10.degree. C. and often at least 20.degree. C. below T1. See col.9, ln.10-42.

Langley et al. teach that a wide variety of active ingredients can be encapsulated by the described technique including dyes (for pressure sensitive paper), agricultural chemicals, perfumes, flavours, condiments, essential oils, bath oils, bleaching agents, and enzymes. Suitable agricultural chemicals are water insoluble pesticides (e.g. herbicides and insecticides) that would otherwise need to be formulated as, for instance, an emulsifiable solution in oil. Langley et al. teach that the encapsulation of enzymes, and in particular detergent enzymes, are useful for inclusion in laundry or other detergent compositions. When the particle size is small, e.g. below 20 μm , the particulate composition is generally provided as a dispersion in the liquid medium, for instance a liquid detergent. When the particle size is larger, for instance above 50 μm and especially above 100 μm , the particles can be recovered as dry particles. See col.5-22.

In examples 2 and 4, Langley et al. illustrate the encapsulation of an active ingredient, Savinase enzyme compounded with an LCST polymer. See col.11 examples 2, 4. Accordingly, the broad teachings of Langley et al. appear to anticipate the material limitations of the instant claims.

8. Claims 1-3, 5-21 and 23-35 rejected under 35 U.S.C. 102(e) as being anticipated by Van Vilsteren et al. (US 6,290,988).

Van Vilsteren et al. teach an encapsulated material wherein at least a part of the material is kept encapsulated during heat treatment in an aqueous environment and is released during cooling after a heat treatment. The material is encapsulated in a layer of a hydrophobic film-forming material and a layer of a material having a low critical

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solution temperature (LCST) below the treatment temperature. The layer containing the hydrophobic material may be situated inside the layer having the LCST and have a melting point below the LCST, but it may also be situated outside the layer having the LCST and have a melting point above the LCST of said layer. Said layers may also be applied together. See abstract.

Van Vilsteren et al. teach that the LCST is between ambient temperature and the treatment temperature, for example between 30, preferably 40, and 100.degree. C., in particular between 50 and 90.degree. C. Useful materials having an LCST are, for example, alkylated and/or hydroxyalkylated polysaccharides, such as hydroxypropylmethylcellulose (HPMC), for example Celacol.RTM., ethyl(hydroxyethyl)cellulose (EHEC), hydroxypropylcellulose (HPC), methylcellulose (MC) and mixtures thereof. Mixtures of cellulose ethers with carboxymethylcellulose (CMC) also form suitable LCST polymers. Other polymers which exhibit LCST behaviour in water and which are suitable as coating material are: polymers of mono- or di-N-alkylated acrylamides, copolymers of mono- or di-N-substituted acrylamides with acrylates and/or acrylic acids or mixtures of interpenetrating networks of the above-mentioned (co-)polymers. Suitable furthermore are polyethylene oxide or copolymers thereof, such as ethylene oxide/propylene oxide copolymers and graft copolymers of alkylated acrylamides with polyethylene oxide. Furthermore: poly-methacrylic acid, polyvinyl alcohol and copolymers thereof, polyvinyl methyl ether, certain proteins, such as poly(VAPGVV), a repeating unit in the natural protein elastin, and certain alginates. Mixtures of said polymers with salts or surfactants can also be used as encapsulating

material having an LCST. The LCST temperature can thereby be modified. The layer containing the LCST may be sprayed from an optionally heated solution or dispersion, for example from a solution in water and/or an alcohol. The thickness and mass of said layer having the LCST is comparable with that of the optional first hydrophobic layer. The layer containing the LCST or any other layer may further contain other additives such as colorants, flavorants, fragrances, stabilisers, plasticisers, surfactants, fillers, etc. See col.2, ln.65 to col.3, ln.35.

Specifically regarding claims 16, 20, 33-34, Van Vilsteren et al. teach The encapsulated ingredients can vary in size from micrometers (e.g. 30 to 1000.mu.m) up to several centimeters, e.g. for tablets. See col.4, ln.45-49.

Regarding the two phases, Van Vilsteren et al. teach that two layers should at least be present, a lower hydrophobic layer and an upper LCST layer. Such products are referred to herein as semi-solid materials, which means that they are neither thin liquids, nor complete solids, but rather high viscosity, usually aqueous emulsions, pastes, gels, creams or the like. A second hydrophobic layer may be present on top of the hydrophobic layer, in order to avoid migration before the heat treatment. These can be cosmetic products, hygiene products, household products, and especially foodstuffs. See col.4, ln.60 to col.5, ln.20.

In example 1, Van Vilsteren et al. illustrate a tablet comprising an active ingredient compounded with an LSCT polymer. Accordingly, the broad teachings of Van Vilsteren et al. appear to anticipate the material limitations of the instant claims.

9. Claim 36 rejected under 35 U.S.C. 103(a) as being unpatentable over Van Vilsteren et al. (US 6,290,988) as applied to claims 1-3, 5-21 and 23-35 above.

Van Vilsteren et al. are relied upon as set forth above. However, Van Vilsteren et al. do not specifically teach a machine dishwashing composition as recited by the instant claims.

It would have been obvious to one of ordinary skill in the art, at the time the invention was made to formulate a machine dishwashing composition comprising an active ingredient compounded with an LCST polymer as recited by the instant claim because the teachings of Van Vilsteren et al. suggest household products comprising an active ingredient compounded with an LCST polymer in general.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Preeti Kumar whose telephone number is 703-305-0178. The examiner can normally be reached on M-F 9:00am - 5:30pm.

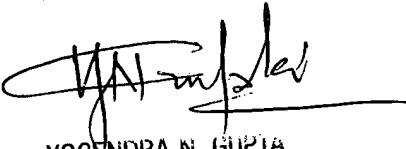
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yogendra N. Gupta can be reached on 703-308-4708. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-872-9309.

Preeti Kumar
Examiner
Art Unit 1751

PK
July 28, 2003



YOGENDRA N. GUPTA
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